

Exhibit H

The Computer Desktop Encyclopedia

Author of the Leading Dictionary
of Computer Terms:
THE COMPUTER GLOSSARY

**Raves for Alan Freedman's
The Computer Glossary:**

"... the best dictionary
of computing terminology.
Should be in all libraries
and desktops where
computers are in regular use."

—The New York Public Library

"There is no better computer
reference anywhere."

—Government Technology

ALAN FREEDMAN

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Printing number

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graphic character

graphic character

A printable symbol that includes digits and letters.

graphics

Called *computer graphics*, it is the creation and manipulation of picture images in the computer. It is defined here as *graphics*, to keep it next to the other entries that begin with "graphics."

A graphics computer system requires a graphics display screen, a graphics input device (tablet, mouse, scanner, camera, etc.), a graphics output device (dot matrix printer, laser printer, plotter, etc.) and a graphics software package; for example, a CAD, drawing or paint program.



Papyrus of the 21st Century

The graphics tablet and other input devices such as the mouse are the drawing tools of the 21st century.

Vector Graphics and Raster Graphics

Two methods are used for storing and maintaining pictures in a computer. The first method, called vector graphics (also known as object-oriented graphics), maintains the image as a series of points, lines, arcs and other geometric shapes.

The second method, called raster graphics, resembles television, where the picture image is made up of dots.

Understanding these two methods and how they intertwine in today's graphics systems is essential for mastering computer graphics. When you create an image on the computer, you may not know which method is used, but when you try to manipulate that image, it will become obvious.

Vector Graphics for CAD and Drawing

Vector graphics is the method employed by computer-aided design (CAD) and drawing packages. As you draw, each line of the image is stored as a vector, which is two end points on an x-y matrix. For example, a square becomes four vectors, one for each side. A circle is turned into dozens or hundreds of tiny straight lines, the number of which is determined by the resolution of the drawing. The entire image is commonly stored in the computer as a list of vectors, called a display list.

A vector graphics image is a collection of graphic elements, such as lines, squares, rectangles and circles. Although grouped together, each element maintains its own integrity and identity and can always be selected and erased or resized independent of all the others.

Vector graphics can be transmitted directly to x-y plotters that "draw" the images from the list of vectors. Older CAD systems used vector screens that also drew the vectors. Today, all monitors are raster graphics displays made up of dots, and the vectors are "rasterized" into the required dot patterns by hardware or software.

Raster Graphics for Imaging and Painting

Raster graphics is the TV-like method that uses dots to display an image on screen. Raster graphics images are created by scanners and cameras and are also generated by paint packages. A picture frame is divided into hundreds of horizontal rows, with each row containing hundreds of dots, called pixels.

Unlike TV, which uses one standard (NTSC) for the country, there are dozens of raster graphics standards. Also, unlike TV, which records and displays the dots as infinitely variable shades and colors (analog), computer graphics have a finite number of shades and colors (digital).

When you scan an image or paint an object into the computer, the image is created in a reserved area of memory called a bitmap, with some number of bits corresponding to each dot (pixel). The simplest monochrome bitmap uses one bit (on/off) for each dot. Gray scale bitmaps (monochrome shades) hold a number for each dot large enough to hold all the gray levels. Color bitmaps require three times as much storage in order to hold the intensity of red, green and blue.

The image in the bitmap is continuously transmitted to the video screen, dot for dot, a line at a time, over and over again. Any changes made to the bitmap are instantly reflected on the screen.

IBM PC Company

701C	1995	486DX2/50 or DX4/100, act. matrix, TrackWrite, sound, 4 pounds
710T	1993	486SLC/25, pen-based
720	1993	486SLC2 50/25, PCMCIA slot
720C	1993	486SLC2 50/25, PCMCIA, active color
750Cs	1994	486SL/33, PCMCIA, dual scan passive, removable hard disk, sound
755CSE	1994	DX4/100, dual scan passive, sound
755CE	1994	DX4/100, act. matrix, sound
755CD	1994	DX4/100, act. matrix, sound, CD-ROM
760CD	1995	P90, 12.1" active matrix, CD-ROM

IBM PC Company

A subsidiary of the IBM Corporation located in Raleigh, NC, that is involved with all aspects of IBM PCs.

IBM workstation

See *RS/6000*.

IC

See *integrated circuit* and *information center*.

I-CASE

(Integrated CASE) CASE systems that generate applications code directly from design specifications. Features include support for rapid prototyping, modeling the data and processing and drawing logic diagrams.

IC card

See *PC card* and *memory card*.

ICCP

(Institute for Certification of Computer Professionals, 2200 E. Devon Ave., Des Plaines, IL 60018, 708/299-4227) An organization founded in 1973 that offers industry certification and provides worldwide test centers. The Associate Computer Professional exam is open to all. The Certified Computer Programmer (CCP), Certified Data Processor (CDP) and Certified Systems Professional (CSP) require job experience (academic credit may substitute).

ICE

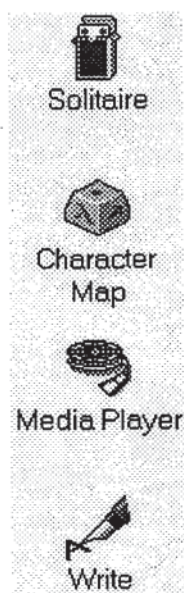
- (1) (In-Circuit Emulator) A chip used for testing and debugging logic circuits typically in embedded systems. The chip emulates a particular microprocessor and contains breakpoints and other debugging functions. See *ROM emulator*.
- (2) (Ice) A Lotus 1-2-3 add-on program from Baler Software Corporation, Rolling Meadows, IL, that adds extensions to Lotus macros. It is used for developing customized macro-driven 1-2-3 programs.

icon

A small, pictorial, on-screen representation of an object (file, program, disk, etc.) used in graphical interfaces. For example, to delete a file in the Macintosh, the file icon is moved onto the wastebasket icon.

iconic interface

A user interface that uses icons.



Icons

These icons represent some of the programs that come with Windows 3.1.

list processing**list processing**

Processing non-numeric data.

list processing language

A programming language, such as LISP, Prolog and Logo, used to process lists of data (names, words, objects). Although operations such as selecting the next to first, or next to last element, or reversing all elements in a list, can be programmed in any language, list processing languages provide commands to do them. Recursion is also provided, allowing a subroutine to call itself over again in order to repetitively analyze a group of elements.

literal

In programming, any part of an instruction that remains unchanged when translated into machine language, such as an output message.

lithium ion

A rechargeable battery technology that provides more than twice the charge per pound as nickel hydride. Although used in camcorders and other devices, Toshiba introduced the first lithium ion notebook in the U.S. in late 1993.

Lithium polymer technology may provide twice as much power as lithium ion and be able to keep a notebook powered all day long, but this technology is not expected to appear until at least 1996.

little endian

See *big endian*.

liveware

People.

LLC

(Logical Link Control) See "LANs" under *data link protocol*.

LLCC

See *leadless chip carrier*.

load

(1) To copy a program from some source, such as a disk or tape, into memory for execution. See *boot*.

(2) To fill up a disk with data or programs.

(3) To insert a disk or tape into a drive.

(4) In programming, to store data in a register.

(5) In performance measurement, the current use of a system as a percentage of total capacity.

(6) In electronics, the flow of current through a circuit.

load balancing

The fine tuning of a computer system, network or disk subsystem in order to more evenly distribute the data and/or processing across available resources.

loaded

Brought into the computer and ready to go. See *load*.

loaded line

A telephone line from customer to central office that uses loading coils to reduce distortion.